CLAIMS

1. An arrayed waveguide grating type optical multiplexer/demultiplexer circuit, comprising on a flat substrate a plurality of first optical waveguides, a first slab waveguide which is connected to the first optical waveguides, an arrayed waveguide, connected to the first slab waveguide, consisting of a plurality of optical waveguides which sequentially become longer with a prescribed waveguide length difference, a second slab waveguide which is connected to the arrayed waveguides, and a plurality of second optical waveguides which are connected to the second slab waveguide; further comprising;

a parabola waveguide in which a width W of the first optical waveguide contacting with the first slab waveguide is defined by the following equation with respect to a propagation axis Z of optical wave,

$$Z=A\ (W^2-W_0^2)-Z_0$$

where, A: a coefficient, W_0: a width of the first optical waveguide, and Z_0: a length from the first slab waveguide;

and a taper waveguide in which a width W' of the second optical waveguide contacting with the second slab waveguide is defined by the following equation with respect to a propagation axis Z of optical wave,

$$Z=A'(W'-W_0')-Z_0'$$

where,

A': a coefficient, W_0': a width of the second optical

waveguide, and Z_0': a length from the second slab waveguide;

wherein the length Z_0 is set within a range defined by the following condition,

$$Z_{a,0} \leq Z_0 \leq Z_{p,0}$$

where

$Z_{a,0}$: a parabola waveguide length for which a ratio of the amplitude absolute value between a main peak and first side peaks in the field distribution of the parabola waveguide far-field has an upper limit of 0.217, and $Z_{p,0}$: a parabola waveguide length for which a relative phase between the main peak and the first side peaks in the field distribution of far-field has a lower limit of 3.14 radians.

2. An arrayed waveguide grating type optical multiplexer/demultiplexer circuit according to Claim 1, wherein each waveguide is a silica glass optical waveguide on a flat silicon substrate.